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| **Subject / Course:** Mathematics | **TC Name:** Michelle King | |
| **Grade Level:** 8 | **Date:** October 22, 2010 | |
| **Topic:** Exploring Sample Size | **Time of Class:** 12:40 – 2:15 | |
| **AT Name:** Lindsay Hilderley | **Room # / Location:** 207 | |
| **1. Curriculum Expectation(s) and Goal(s) for the Lesson** | |  |
| 1. **Expectations**:  |  | | --- | | 1. explain the relationship between a census, a representative sample, sample size, and a population | | | |
| 1. **Goal(s) for the lesson:**  |  | | --- | | * Demonstrate the understanding of the relationship between a census, a representative sample, sample size and a population * Demonstrate the ability to select the sample size * Demonstrated the ability to draw conclusions from a sample | | | |
| **2. Preassessment and Accommodations/Modifications** | | |
| |  |  | | --- | --- | | **Preassessment:** | **Accommodation/Modification:** | | **Academic Needs: Students who finish early**  **Academic Needs: Students who are unable to finish**  **Behavioural/Social/Emotional Needs: Students who misbehave** | * Due to the nature of the lesson, students should not finish early as most of the lesson is done as a class. However, if students do finish early, they are to do silent reading for the remainder of the period. * Due to the nature of the lesson, students should be able to finish the work in class. However, if students are unable to finish the work on histograms then they are to complete it for homework * Students with IEP’s for behavioural issues will be given warnings for inappropriate behaviour and will be given positive praise/feedback for appropriate behaviours. | | | |

**3. Learning Environment**

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| Students are to work at their desks throughout the duration of the class. Class participation is encouraged through the use of clickers and class discussions. While students are answering the clicker questions, there should be no talking amongst themselves, answers should be given individually, this is just for participation and not if they are right or wrong in their answers. While we are doing the Milk Shake activity, there will be two class volunteers to help at the front – 1 student to record the data on the board, 1 to pull the sample out of the bag. After the samples have been collected and recorded, students will return to their seats. Pair discussions will be encouraged to answer the discussion questions. |

**4. The Overview (Agenda) for your lesson:**

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| 1. Which is which?  2. Clickers  3. Review: Presenting Data  4. Census versus Sample  5. Milkshakes  6. Reflection |

**5. Resources and Materials for your class**

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| Teacher Materials   * Media cart (projector) * Lap top * Clickers * Paper (32 squares) * Bag * Power point presentation * Text book * Math dictionary   Student Materials   * Lined paper * Writing utensils * Text book * Math dictionary   Resources:  Zimmer, D. (2006). *Mathematics 8.* Toronto: Nelson. |

**6. Content, Teaching Strategies, for Lesson**

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| ***Time*** | ***Teaching or***  ***Assessment Strategy*** | ***Detailed Description*** |
| *5 min* | *Introduction* | *Before the Bell:*   * *Set up the lap top to the projector* * *Install clicker device and test to make sure it is working* * *Put up bell work question on the board so that students can answer as they come in* * *Have the students take out lined paper (couple of sheets) and a writing utensil but have everything else closed*   *Minds On*   * *Place three graphs on the board, have the students identify them as they come into the class.* |
| *10 min*  *10 min*  *10 min*  *7 min*  *3 min*  *40 min* | *Instruction/ Application*  *Direct Instruction and Clickers*  *Clickers and Class Discussion*  *Note taking*  *Direct Instruction*  *Direct Instruction*  *Survey the class*  *Direct Instruction*  *Think-Pair-Share*  *Data Collection and prediction*  *Class Discussions* | *Clickers*   * *Introduce the students to clickers* * *Instruct them on the proper use of the clickers (ensure that answers are anonymous, however, it is important that they answer truthfully)* * *Hand clickers out to each student* * *Do the practice problems for clickers to ensure that everyone’s clickers are working*   *Review: Organizing and Presenting Data (homework check)*   * *Have the students close their books* * *Do the 5 review questions within the power point* * *Discuss the answers as a class*   *Census versus sample*   * *Discus the difference between census and a sample* * *Have the students copy down the definitions into their notes* * *Do clicker questions relating to census and samples*   *Exploring Sample Size*   * *Have a student read the problem on the board* * *Explain what they are going to do.*   *Explanation*   * *We are now going to focus our attention on sample sizes. Can I please have a volunteer to read the problem on the board?* * *We are going to perform this little experiment, and see what sample size we should use in order to determine the preferred flavour* * *Have the students copy down the three charts on the board.*  |  |  |  |  | | --- | --- | --- | --- | | *Sample Number* | *Preferred Flavour* | | | | *Chocolate* | *Strawberry* | *Vanilla* | | *1* |  |  |  | | *2* |  |  |  | | *3* |  |  |  |   *One chart for each of the following sample sizes: 1,5, 10*   * *As students are copying down the charts, hand each student a piece of paper, on that paper I would like you to secretly write down your preference of milkshake: Chocolate, Strawberry, or Vanilla.*   *Activity*   * *When you are done, pass your sheets up to the front. (collect the sheets and then place them into a bag)* * *For the first sets of data, we are going to use a sample size of one. So I am going to reach into the bag and grab one piece of paper and record the flavour into our chart. Once recorded, we are going to return the sheet back into the bag.* * *(pull a sheet out of the bag, call it out and record it into the chart)* * *have student come up to pick the remaining four samples. Record each result* * ***with the person sitting next to you, predict the preferences for the population. How confident are you in your prediction? Why?*** * *Briefly discuss* * *We are now going to move onto samples of 5.* * *Have a student come up and pick 5 papers out of the bag, record each of them on the second chart.* * *Again predict the preferences for the population. Is it the same as before, different?* * *Finally, have a couple of students come up and pick a sample size of 10* * *Repeat the same steps and answer the same question.* * ***Which sample size has the most variation in results? Which sample size has the least variation?*** * ***Hands up, who believes that chocolate is our preference? Strawberry? Vanilla?*** * *Lets find out, with your clickers, enter the same flavour that you put on your sheet of paper.* * ***Based on the class preference, which sample size gave us the best result?*** * ***Is our class a representative sample of our school?*** * ***Suppose that you want to know the cartoon-watching habits of students. You decide to use a sample from a class at a high school. Is this a representative sample of your school?*** |
| *5 min* | *Consolidation* | *On a separate sheet of paper, I would like you to explain why a large sample is likely to be a better predictor of a population’s preferences than a small sample.*  *\*if time remaining, do one final survey of the class, using the clickers and the prepared survey. Ask students to answer using the best possible answer. Students will use these results next class to analyze results.* |